CLAIMS

What is claimed is:

1. A method of testing a satellite receive antenna of a multibeam satellite system, comprising the steps of:

uplinking a test signal from a payload test earth station to the receive antenna;

slewing the satellite over orientation angles using a slow constant attitude translation;

sensing a power level of the test signal on-board the satellite during slewing;

transmitting downlink telemetry comprising sensed power level and orientation angles of the satellite from the satellite to a telemetry and command earth station that is located at a geographically separate location from the payload test earth station; and

processing the sensed power level and said orientation angles to verify the operation of said receive antenna on the satellite.

2. A method of testing a satellite transmit antenna of a multibeam satellite system, comprising the steps of:

uplinking commands from an earth station to a satellite to cause a translation of the satellite;

transmitting downlink telemetry comprising orientation angles of the satellite from the satellite to a telemetry and command earth station;

measuring downlink noise in a small bandwidth at the telemetry and command earth station while the satellite is translated; and

processing the noise power level and orientation angles to verify operation of the transmit antenna on the satellite.

3. The method recited in Claim 2 wherein the uplinked commands cause a slow constant attitude translation of the satellite.

4. The method recited in Claim 2 wherein the uplinked commands cause a discrete steps in attitude translation of the satellite.

5. A method of generating an input chain frequency response curve for a multibeam satellite communication system, comprising the steps of:

positioning an uplink beam is over an earth station;

uplinking signals at different frequencies of interest from the earth station to the satellite;

generating downlink telemetry on-board the satellite that corresponds to the signal strengths of respective signals at the different frequencies;

transmitting the signal strength telemetry from the satellite to the earth station;

recording the signal strength telemetry and uplink frequency at the earth station; and

processing the recorded signal strength telemetry and uplink frequency to produce the input power frequency response curve.

6. The method recited in Claim 5 wherein the signal strength telemetry is transmitted to a second earth station that is located at a geographically separate location from the uplinking earth station.

7. A method of generating an input chain transfer curve for a multibeam satellite communication system, comprising the steps of:

positioning an uplink beam is over an earth station;

uplinking RF signals at a plurality of power levels from the earth station to the satellite;

generating downlink telemetry on-board the satellite that corresponds to the signal strengths of respective signals at the different power levels;

transmitting the signal strength telemetry from the satellite to the earth station;

recording the signal strength telemetry at the earth station; and

processing the recorded signal strength telemetry to produce the input chain transfer curve corresponding to input power frequency response.

8. The method recited in Claim 7 wherein the signal strength telemetry is transmitted to a second earth station that is located at a geographically separate location from the uplinking earth station.

9. A method of generating an output chain frequency response curve for a multibeam satellite communication system, comprising the steps of:

positioning a downlink beam is over an earth station;

measuring noise power of the downlink beam over a small bandwidth centered around a plurality of selected frequency of interest at the earth station;

processing the noise power measurements to generate the output chain frequency response curve.

10. A method of generating a gain measurement of a transponder of a multibeam satellite communication system, comprising the steps of:

positioning a downlink beam is over an earth station;

measuring noise power of the downlink beam over a small bandwidth at a selected frequency at the earth station;

processing the recorded noise power measurements to generate a gain measurement of the transponder.

11. The method recited in Claim 10 wherein the noise power of the downlink beam is measured at the center of the bandwidth at the selected frequency.